Shanghai Hiwave Precision Instrument Co., Ltd.

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Hiwave®
INNOVATIVE

Stock Code
837263

Scanning Acoustic Microscope

PRODUCT CATALOGUE

www.ehiwave.com

ABOUT US

Shanghai Hiwave Precision Instruments Co., Ltd. (HIWAVE, stock code: 837263) was founded in Aug. 2012, located in the core area of the Southern Shanghai Science and Technology Innovation Center, adjacent to Shanghai Jiao Tong University. We are dedicated to the R&D, manufacturing and sales of SAM (Scanning Acoustic Microscopes), providing high-end ultrasonic non-destructive testing solutions.

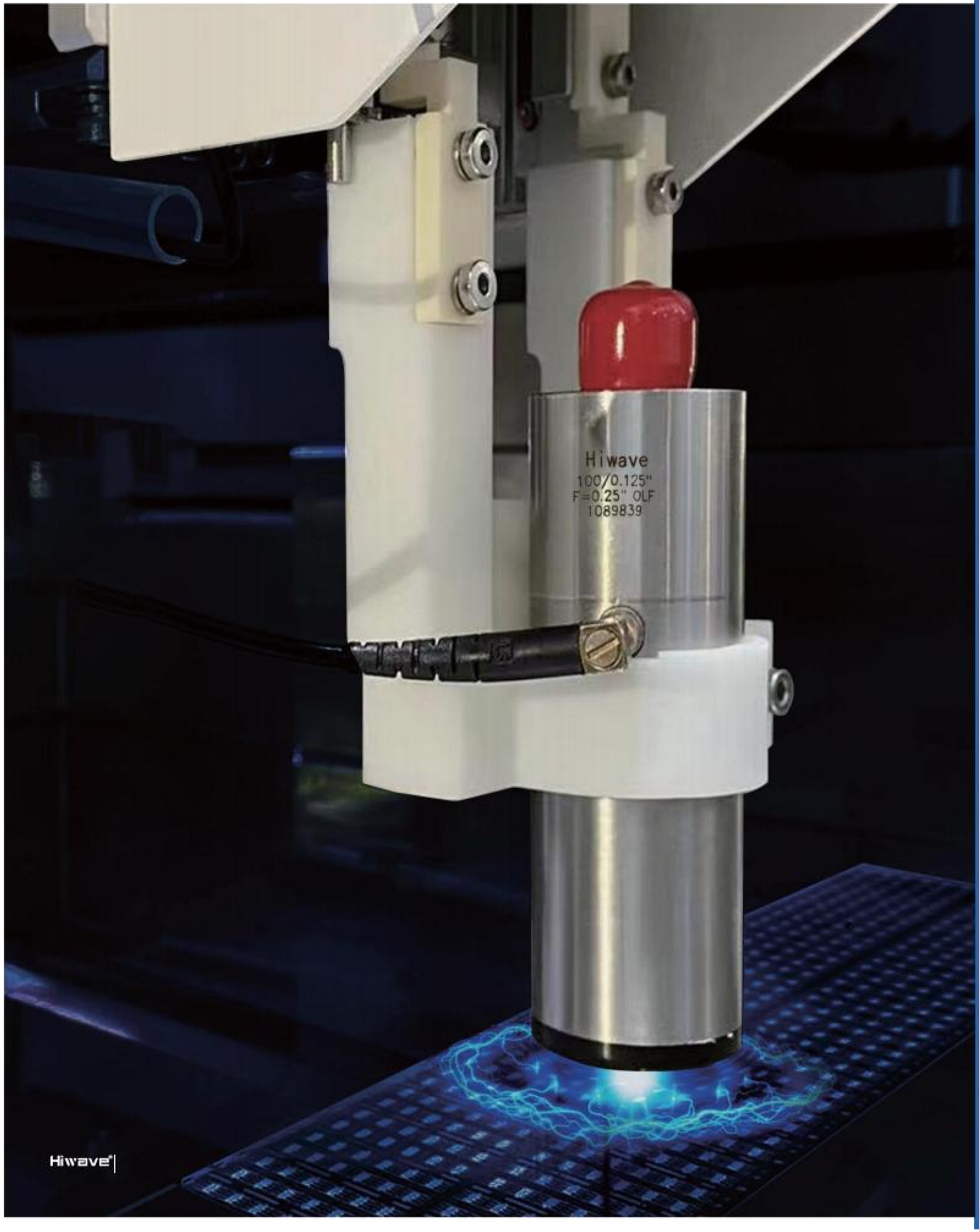
HIWAVE was listed on the New Third Board in May 2016 and is recognized as a national high-tech enterprise and a "specialized, refined, unique, and innovative" enterprise in Shanghai. We have gotten the ISO9001 quality management certification, and our products have obtained CE and CSA certifications.

Our products are widely applied in the fields of new energy, new materials, and electronics, including liquid cold plates, semiconductor devices, electronic components, ceramic substrates, and packaging materials.

HIWAVE

INNOVATIVE

- HIWAVE mission: Becoming a Leader in NDT
- HIWAVE provides high-end ultrasonic NDT solutions.
- HIWAVE focuses on practical innovation and teamwork.



HONORS & CERTIFICATIONS

23
Invention Patents

47
Utility Model Patents

12
Software Coprights

6
Design Patents


高新技术企业
证书
企业名称：上海和伍精密仪器股份有限公司
证书编号：GR202131003327
发证时间：2021年11月18日
有效期：三年
批准机关：


上海和伍精密仪器股份有限公司


CERTIFICATE
ATTESTATION
CERTIFICATE OF ELECTROMAGNETIC COMPATIBILITY AND LOW VOLTAGE DIRECTIVES


发明专利证书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Partners

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Schneider Electric
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黄河旋风
HUANGHE WHIRLWIND

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SCY

1897
ZHEJIANG UNIVERSITY

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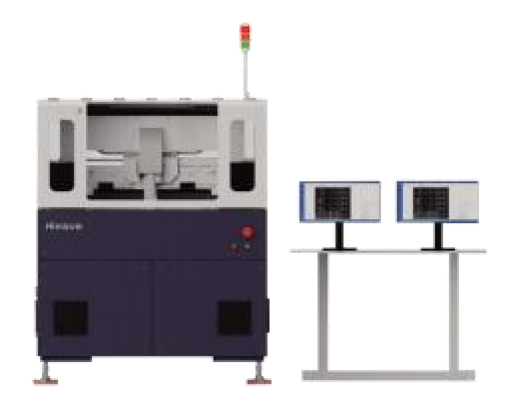
Products


T400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Probes

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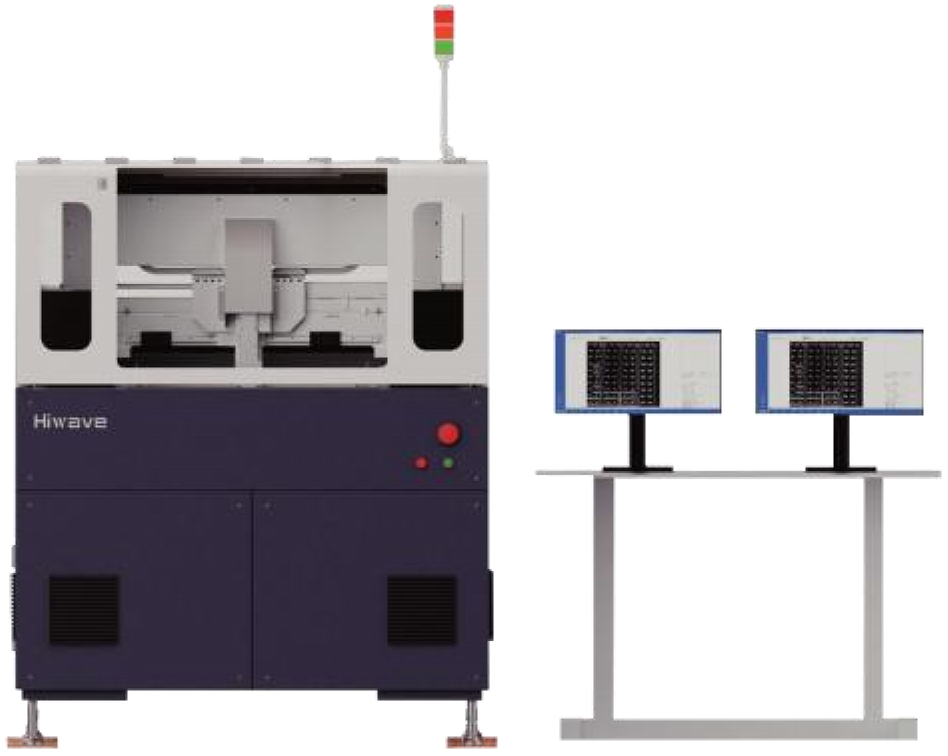
T400



Product Overview

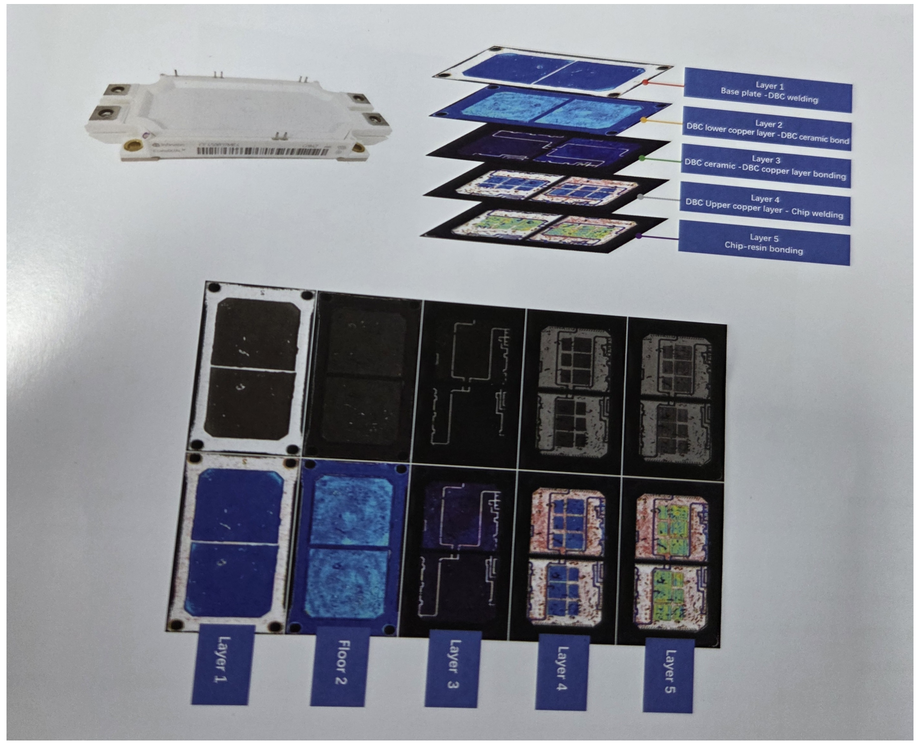
The Scanning Acoustic Microscope (SAM) is a non-destructive testing device that uses high-frequency ultrasonic waves to detect internal defects such as pores, cracks, inclusions, and delaminations in materials. It provides graphical and intuitive images without damaging the sample.

Product Features

1.Multiple scanning modes: A-scan, B-scan, C-scan, multi-layer scan, rapid scan, tray scan, and thickness measurement.
2.Quantitative analysis: Visualizes defect locations, shapes, sizes, and calculates defect percentages, with labeling and thickness/range measurements.
3.Image coloring: Automatic and manual coloring options based on phase reversal, grayscale, thickness, with special coloring features.
4.Batch processing: Suitable for single-device scanning and batch defect identification, aiding sorting out defective products.
5.Probe compatibility: Supports 1-230 MHz ultrasonic probes.
6.Software: Self-developed with bilingual (Chinese/English) interface, customizable and upgradable.
7.Dual-probe option: Enhances detection efficiency.
8.Dual-channel upgrade: Doubles operational efficiency.
9.Customization: Provides software and fixture customization for specific testing needs.
10.Load capacity: Suitable for pallet, panel, etc., for defect detection.
11.High-precision motion: Ensures accurate positioning.

Industry Applications: Wafer, tray, target material, power battery, IGBT module, ceramic substrate, printed circuit board (PCB), etc.

C-scan image of IGBT



Specification	Description
Overall size	1400mm*1300mm*1750mm
Tank size	690mm*570mm*650mm
Scanning range	450mm*450mm*150mm
Maxium scanning speed	1000mm/s
Image resolution	1~4000μm
Probe	1~230MHz
Repeated positioning accuracy	X≤±0.003mm Y、Z≤±0.01mm

S500

Product Overview

The S500 Series Scanning Acoustic Microscope is a non-destructive testing imaging device designed for the semiconductor industry. It uses high-frequency ultrasonic waves to detect defects such as pores, cracks, inclusions, and delamination within semiconductor devices and materials, presenting these defects in an intuitive graphical format. The scanning process does not damage the sample or affect its performance.

Product Features

1.Supports multiple scanning modes: A-scan, B-scan, C-scan, transmission scan , multi-layer scan, tray scan, and thickness measurement.

2.Quantitative analysis: Displays the position, shape, and size of internal defects via images, includes defect size and area statistics, and automatically calculates the percentage of the inspected area occupied by defects; features defect size labeling; thickness and distance measurement.

3.Image coloring: Automatic coloring based on phase reversal; manual coloring based on grayscale; automatic color adjustment according to thickness variations.

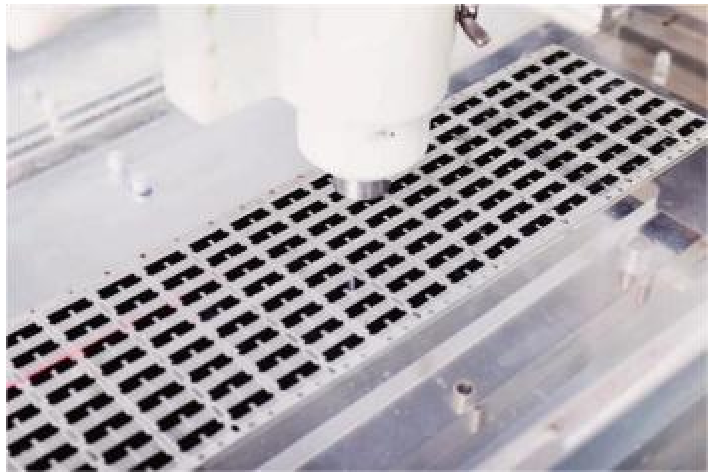
4.Suitable for rapid scanning and analysis of individual devices and can handle batch placement of samples for simultaneous defect recognition, quickly identifying substandard products.

5.Compatible with 1-230 MHz ultrasonic probes.

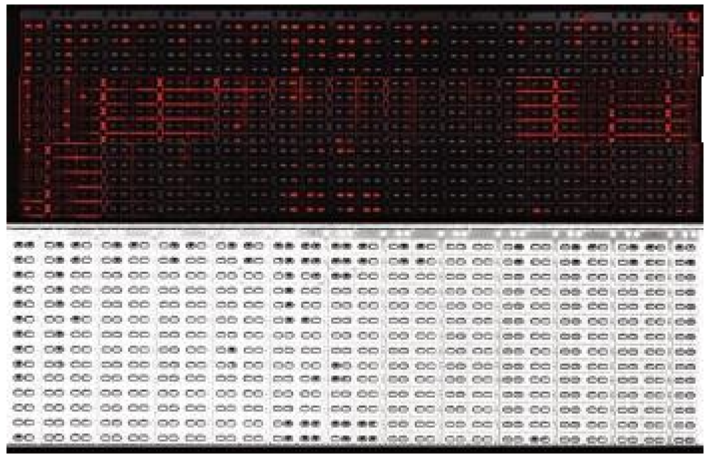
6.Self-developed inspection software with bilingual (Chinese/English) interface, continuously upgradable based on customer needs.

Industry Applications: plastic-encapsulated IC, optoelectronics, microwave power device, MEMS, flip chip, stacked die, MCM, diamond composite, electrical welding parts, and ceramic.

Image of IC packaging



▼ The red means delamination.



▲ The top is c-scan.The bottom is T-Scan

Specification	Description
Overall size	750mm×700mm×1350mm
Tank dimension	350mm×220mm×120mm
Scanning range	230mm×70mm×50mm
Maximum scanning speed	300mm/s
Probe	1~230MHz
Positioning accuracy	X/Y≤±1μm， Z≤±10μm
Repeated positioning accuracy	X/Y≤±0.01mm， Z≤±0.02mm

S600

Product Overview

The S600 Series Scanning Acoustic Microscope is a non-destructive imaging device using high-frequency ultrasonic waves to detect internal defects in semiconductor devices and materials, such as pores, cracks, inclusions, and delaminations. It displays these defects graphically without damaging the sample or affecting its performance.

Product Features

1.Multiple scanning modes: A-scan, B-scan, C-scan, transmission scan , multi-layer scan, tray scan, and thickness measurement.

2.Quantitative analysis with visual defect location, shape, and size display, defect size and area statistics, and automatic defect percentage calculation; includes defect size labeling and thickness/distance measurement.

3.Image coloring based on phase reversal, manual grayscale coloring, and automatic thickness-based coloring.

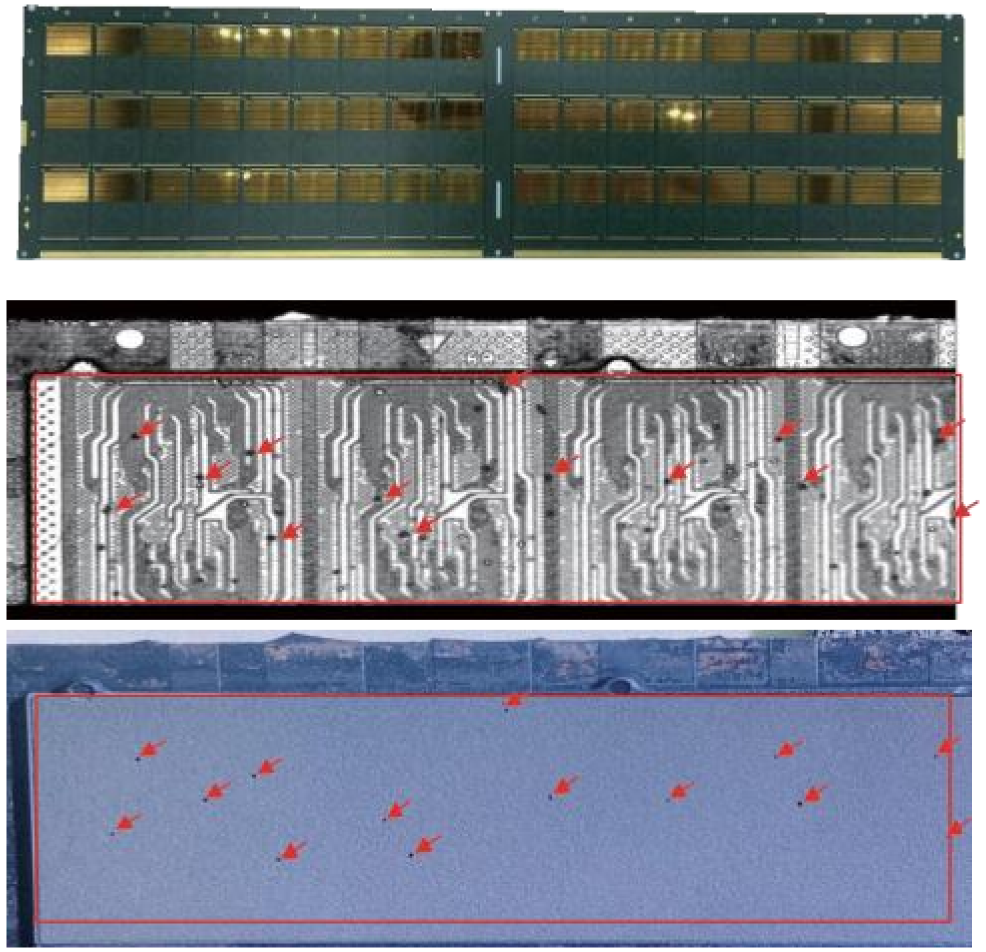
4.Suitable for rapid scanning of individual devices and batch defect identification, facilitating quick sorting of defective products.

5.Compatible with 1-230 MHz ultrasonic probes.

6.Features self-developed inspection software with bilingual (Chinese/English) interface, upgradable based on customer needs.

Industry Applications: Lithium battery, plastic-encapsulated IC, optoelectronics, microwave power device, MEMS, flip chip, stacked die, MCM, diamond composite, electrical welding parts, and ceramic.

Image of Memory chips



Specification	Description
Overall size	1000mm*900mm*1400mm
Tank size	620mm*650mm*150mm
Scanning range	350mm*300mm*100mm
Maxium scanning speed	600mm/s
Image resolution	1~4000μm
Probe	1~230MHz
Positioning accuracy	X、Y≤±0.5μm Z≤±5μm
Repeated positioning accuracy	X、Y≤±0.01mm Z≤±0.02mm

S800

Product Overview

The Scanning Acoustic Microscope is a non-destructive testing device using high-frequency ultrasonic waves to detect internal defects in semiconductor devices and materials, such as pores, cracks, inclusions, and delamination. It displays these defects graphically without damaging the sample or affecting its performance. This makes it suitable for industries like new energy, semiconductors, power electronics and composite materials.

Product Features

1.Scanning Modes: Supports point (A), longitudinal (B), transverse (C), multi-layer, tray scanning, and thickness measurement.

2.Quantitative Analysis: Provides visual defect display, automatic defect percentage calculation, and size labeling.

3.Image Coloring: Offers automatic and manual coloring options based on phase, grayscale, and thickness.

4.Efficiency: Suitable for rapid scanning of individual devices and batch defect identification.

5.Compatibility: Compatible with 1-230 MHz ultrasonic probes.

6.Software: Features bilingual inspection software with continuous upgrades based on customer needs.

7.Dual-Probe Setup: Can be configured with dual probes for enhanced efficiency.

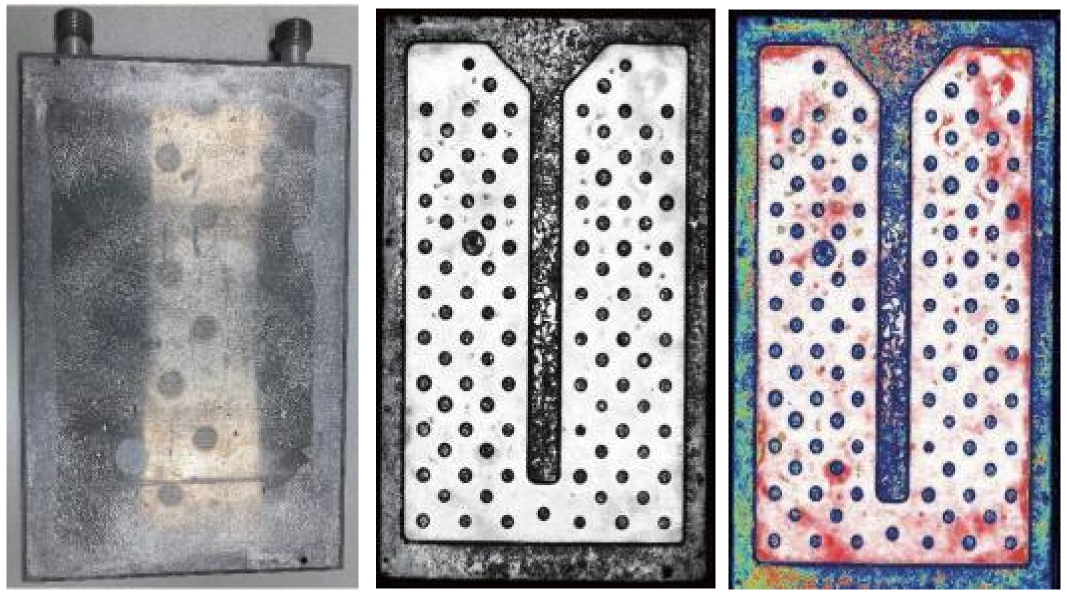
8.Dual-Channel Upgrade: Upgradeable to a dual-channel system for doubled efficiency.

9.Customization: Provides software and fixture customization.

10.AI Algorithms: Develops AI algorithms for improved defect recognition upon request.

Industry Applications：Water cold plate, IGBT modules, diamond composite, carbon fiber composite, electrical welding parts, ceramic material, ceramic substrate, and target material.

Water cold plate C-scan image



Specification	Description
Overall size	1900mm×1550mm×1650mm
Tank size	1250mm×1200mm×450mm
Scanning range	Single channel C-scan：1000mm×700mm×150mm Double channel C-scan：1000mm×1100mm×150mm (Note: This model can support up to eight probes.)
Maximum scanning speed	1000mm/s
Positioning accuracy	X/Y≤±0.5μm Z≤±5μm
Repeated positioning accuracy	X/Y≤±0.01mm Z≤±0.02mm

Probes

Water Immersion Probes

Water immersion transducers are single-crystal devices designed to generate ultrasonic waves when submerged in water or other liquids.

Performance Features

1.Stainless Steel Housing: Resistant to pressure and corrosion.

2.Impedance Matching: Optimized for use with water or other liquids, ensuring maximum energy output.

3.Configurations:Non-Focused (Planar): For general use and thicker materials；Point Focused (Spherical): Enhances sensitivity for small defect detection；Line Focused (Cylindrical): For tube or rod inspections；Self-Focusing (Custom): Finer focus with piezocomposite ceramic material (C).

PL General Purpose Series

PH Narrow Pulse Series

C Piezocomposite Ceramic Series

Applications

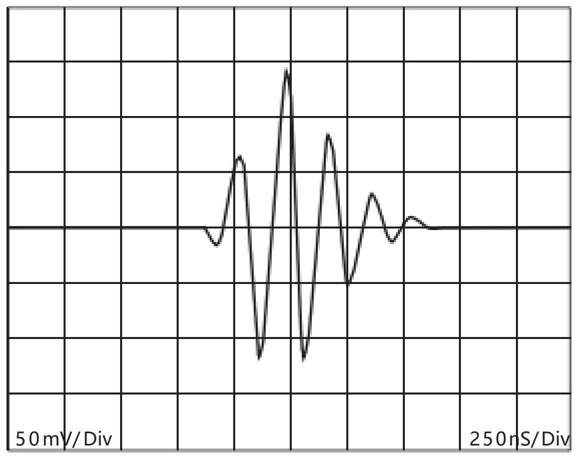
Non-Focused (Planar): Standard applications and thick materials.

Point Focused (Spherical): Improved sensitivity for small defects.

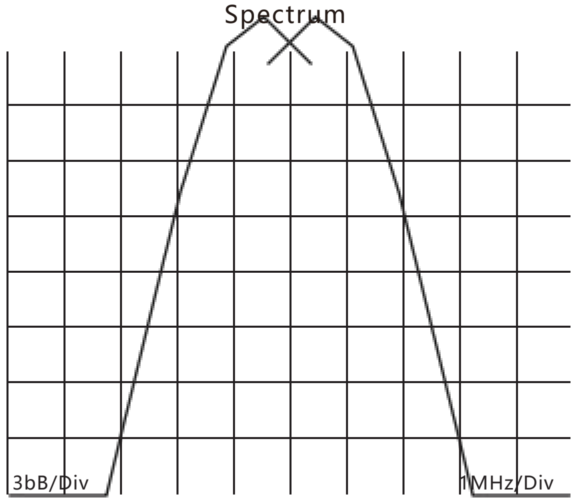
Line Focused (Cylindrical): Tubular or rod materials.

Online Thickness Measurement, automated scanning, material analysis, and imaging systems.

Echo Signal



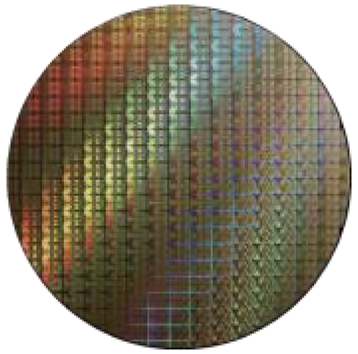
Spectrum

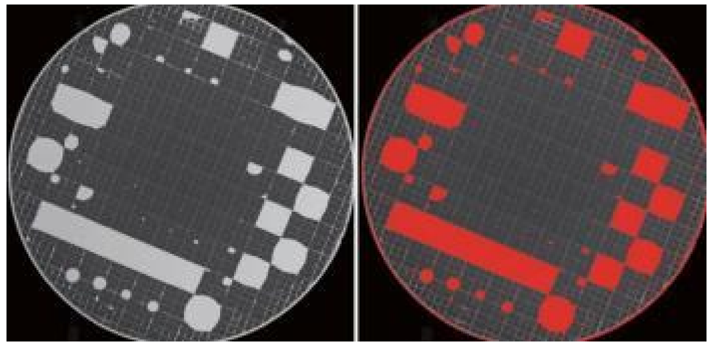


No.	Frequency (MHz)	Focal distance (IN)	Crystal diameter (IN)
1	5	2.00	0.50
2	10	1.25	1.00
3	10	2.00	1.00
4	10	3.00	1.00
5	10	4.00	1.00
6	10	6.00	1.00
7	15	0.75	0.50
8	15	0.60	0.50
9	15	1.25	0.50
10	15	1.50	0.50
11	15	2.00	0.50
12	25	0.50	0.25
13	25	0.75	0.25
14	25	1.50	0.25
15	25	1.00	0.25
16	25	2.00	0.25
17	25	3.00	0.30
18	30	0.50	0.25
19	30	2.00	0.25
20	50	0.50	0.25
21	50	1.00	0.25
22	50	3.00	0.25

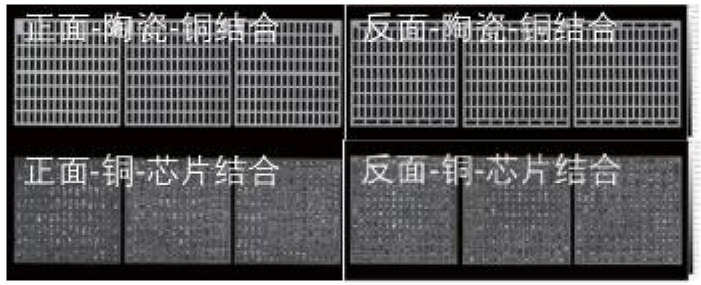
C-Scan Image of DBC Ceramic and Copper Layer Interface

Testing of wafer

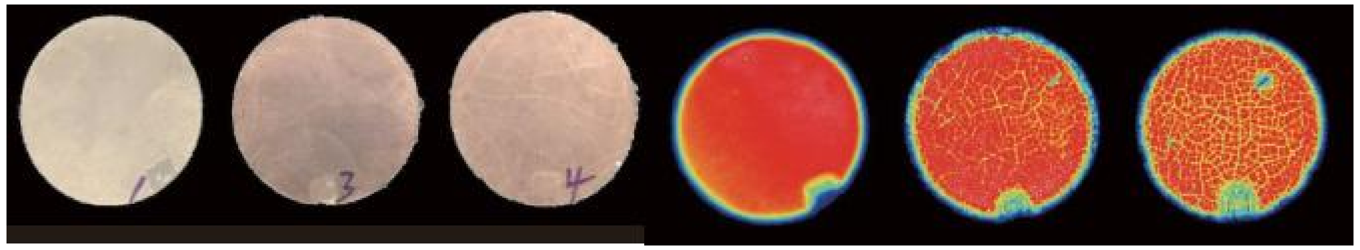




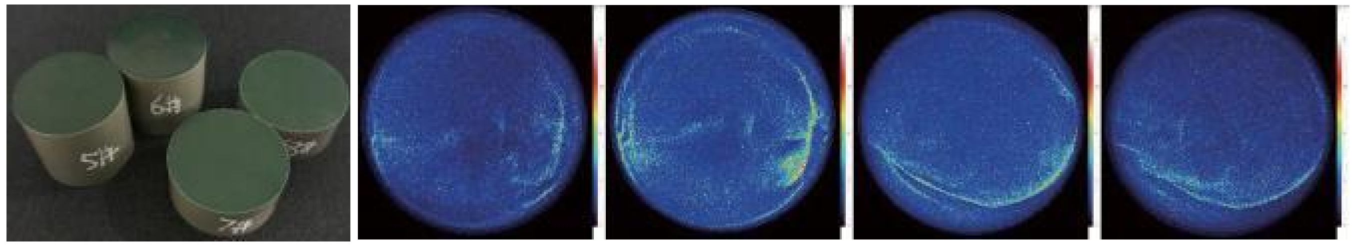
Images for Detecting Defects of Ceramic-Copper and Copper-Chip Bond



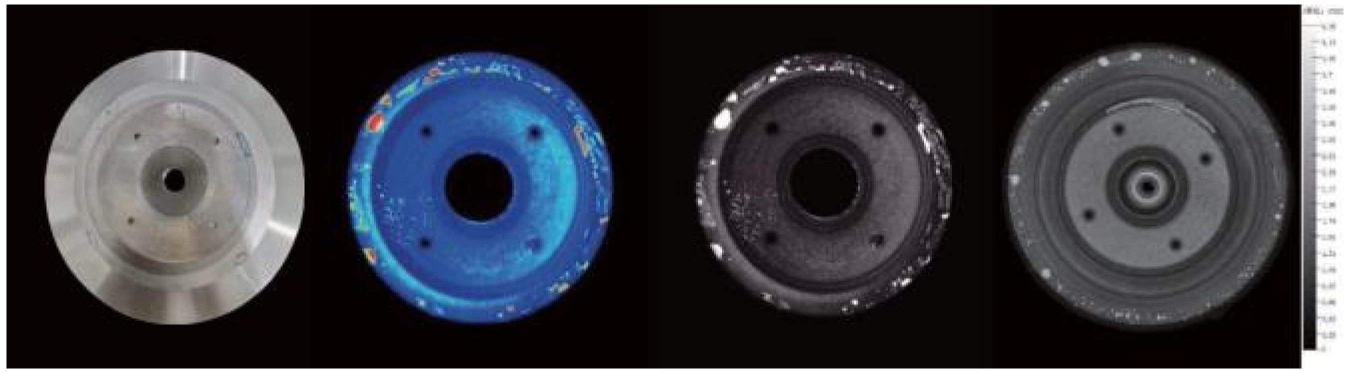
Ultrasonic Testing of Ceramic Cracks



Multi-layer testing of ceramic

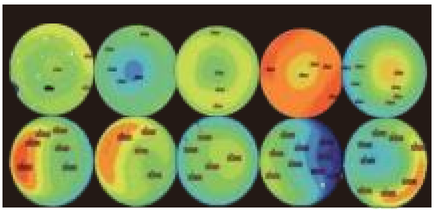


Inspection Images of Target Materials



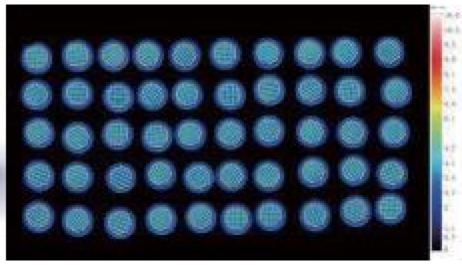
Thickness and Defect

Heat map

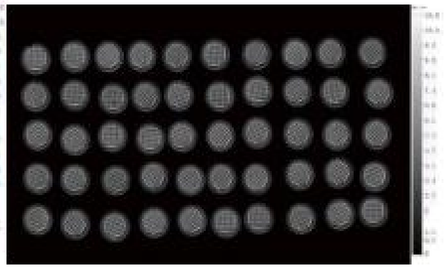


Thickness map

Testing for petroleum

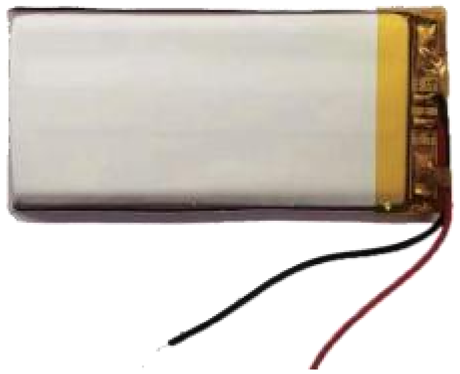


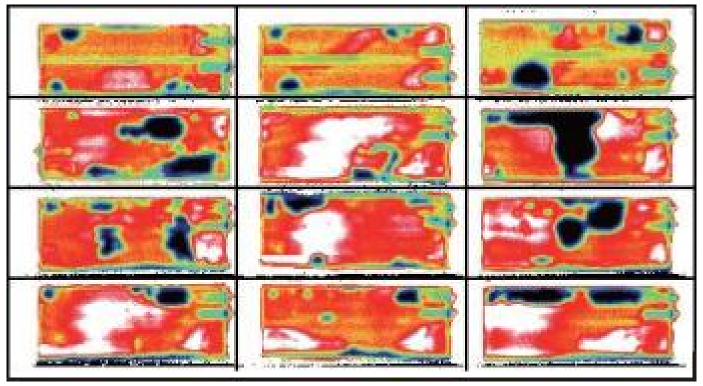
pseudo-color image



gray-scale image

Testing for lithium-ion

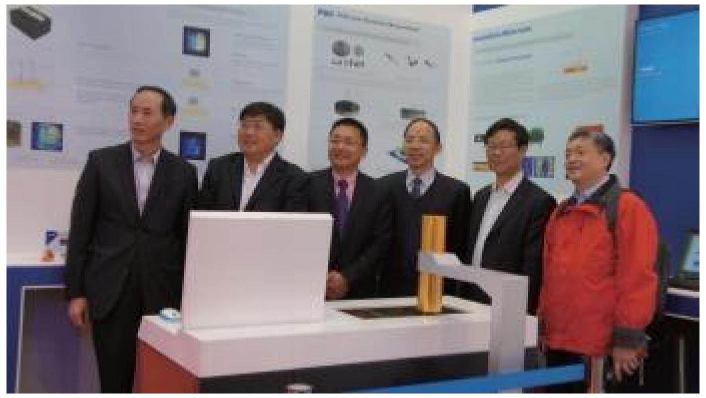




Comprehensive service system

- After-sales Service: 2-hour response.Engineers on-site in 48 hours.
- Training Service: On-site training over 3 days. Remote equipment training.
- Operation Assurance: Customized maintenance.Professional installation and tuning.
- Parts Service: High-quality OEM parts. Fast part replacement.
- Calibration Support
- Upgrade & Optimization
- Software and hardware upgrades. Function enhancements

Exhibition highlights



Email:service@ihiwave.com